

# Outreach Education

Black Canyon of the Gunnison National Park  
Curecanti National Recreation Area

National Park Service



Grade 4, Pre-Visit Activity, "Colorado Geology"

Name: \_\_\_\_\_

Instructions: Read the paragraph. Then fill in the blanks on the back of the page.

## Colorado Geology

There are many National Parks in the United States. Each one protects something special. Some National Parks, like Black Canyon of the Gunnison, have unique rock formations.

Scientists that study rocks are called geologists. Geology is the study of the Earth, rocks and minerals. The outer layer of the Earth is called the crust. It's made of rocks and minerals. Rocks are made of minerals. There are minerals in the earth's crust.



There are three types of rocks. Each type of rock is created in a special way.

**Igneous** rocks are formed from hot, melted rock called magma. Magma that erupts from a volcano is called lava.

**Sedimentary** rocks form from layers of sediment. Sediments are pieces of rock, including pebbles, sand, mud, and clay. Many years ago, layers of sand, mud, and clay piled up on the bottom of very old oceans. Over time, the weight of these layers caused them to harden into sedimentary rock.

**Metamorphic** rocks have been changed from either igneous or sedimentary rock. These rocks get buried deep in the Earth's crust. Inside the crust, there's a lot of heat and pressure. The heat and pressure create metamorphic rocks. All three types of rocks can be found in Colorado.

Geologists can identify rocks and minerals by studying their characteristics. They look at the color and how hard the rocks are. They even use a magnet to see if the rocks are magnetic. You will learn to identify minerals, too!

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**Instructions:** Fill in the blanks, using words from the paragraphs on the other side.

- 1) A \_\_\_\_\_ is a scientist who studies the Earth and rocks.
- 2) Pebbles, sand, mud, and clay are examples of \_\_\_\_\_.
- 3) There are three types of rocks. They are called \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ rocks.
- 4) The Earth's \_\_\_\_\_ is made of rocks and minerals.

**Instructions:** Find a rock that you like. Write a few sentences about your rock and why you chose it. What color is it? Is it rough or smooth? Is it shiny or metallic like a quarter, or not? Draw a picture of it in the box.



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## Mineral Guide

Mineral Name	Color	Magnetism	Luster	Streak	Hardness
1. <b>Chromite</b> ( <i>kroh' – mite</i> )	Black	no	non-metallic	Brown	5 ½
2. <b>Graphite</b> ( <i>graf' – ite</i> )	Grey to black	no	non-metallic	Grey to black	<2 ½
3. <b>Pyrite</b> ( <i>pie' – rite</i> )	Brassy yellow	no	metallic	Greenish-black	>5 ½
4. <b>Talc</b>	Powdery white	no	non-metallic	White	1
5. <b>Magnetite</b> ( <i>mag' – ne- tite</i> )	Black	yes	non-metallic	Black	4 - 5 ½
6. <b>Hematite</b> ( <i>hee' – mah- tite</i> )	Brownish-red	no	non-metallic	Reddish-brown	>5 ½
7. <b>Limonite</b> ( <i>lie' – moh- nite</i> )	Brownish-yellow	no	non-metallic	Yellowish-brown	2 – 5 ½
8. <b>Galena</b> ( <i>gah – lee' – nah</i> )	Lead-grey, silvery	no	metallic	Grey	2 ½
9. <b>Quartz</b> ( <i>kwards</i> )	Colorless, white	no	glassy	None	>5 ½
10. <b>Calcite</b> ( <i>kal' – site</i> )	Colorless, white	no	glassy	Powdery white	3

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## Mineral Mystery

Description (color)	Magnetic? (yes/no)	Luster (metallic, glassy, or non-metallic)	Streak (color left on tile)	Hardness (see below)	Mineral Name (turn your paper over and find a match!)

## Estimating Hardness

### Moh's Scale of Hardness

- |                   |                       |
|-------------------|-----------------------|
| 1. Talc (softest) | 6. Orthoclase         |
| 2. Gypsum         | 7. Quartz             |
| 3. Calcite        | 8. Topaz              |
| 4. Magnetite      | 9. Corundum           |
| 5. Apatite        | 10. Diamond (hardest) |

### Use these items to test hardness:

Fingernail = 2 ½  
Penny = 3 ½  
Glass = 5 ½

### Example:

If you can scratch your fingernail with a mineral, the mineral is harder than 2 ½ (>2 ½).

If a mineral leaves a scratch on the glass plate, the mineral is harder than 5 ½ (>5 ½).

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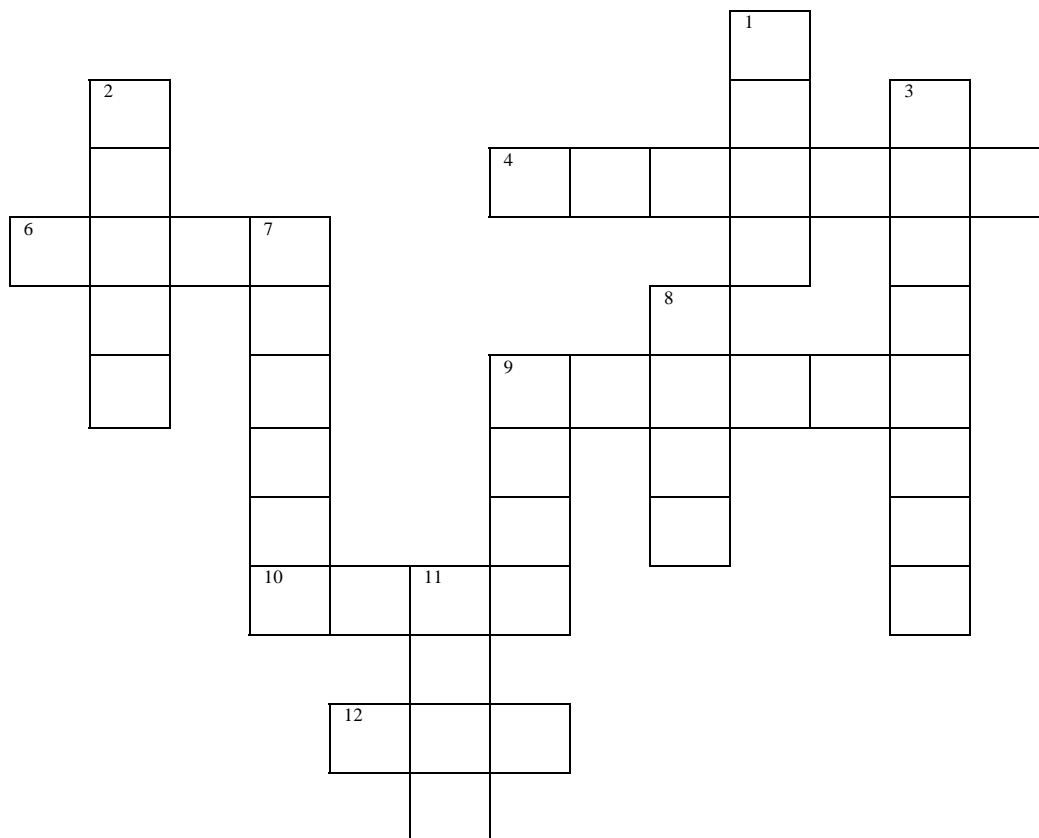
National Park Service



Grade 4, Post-Visit Activity, "Colorado Geology"

Name: \_\_\_\_\_

## Colorado Geology



### DOWN

- 1 The first inhabitants of the Gunnison area
- 2 Abandoned mining towns are called \_\_\_\_\_ towns
- 3 Helped to bring miners and supplies to Gunnison
- 7 Gold was first discovered in this city (our state capital)
- 8 One of the main materials mined near Gunnison
- 9 Miners use this sharp tool to break apart rocks
- 11 Black substance used as an energy source

### ACROSS

- 4 Gunnison is located in the Colorado \_\_\_\_\_ Belt
- 6 Used to make fine jewelry
- 9 Another word used for gold panning
- 10 Digging tunnels into the earth is called hard \_\_\_\_\_ mining
- 12 Used to find gold in streams

**Answer Key to “Colorado Geology” Crossword Puzzle**

